

Translation

PATENT COOPERATION TREATY

PCT/EP2003/011090



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 55414 Mü/rs	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/EP2003/011090	International filing date (day/month/year) 07 October 2003 (07.10.2003)	Priority date (day/month/year) 18 October 2002 (18.10.2002)
International Patent Classification (IPC) or national classification and IPC G01C 19/56		
Applicant LITEF GMBH et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising: a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows: <div style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</div> b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items: <div style="margin-left: 20px;"><input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application</div>

Date of submission of the demand 13 January 2004 (13.01.2004)	Date of completion of this report 27 July 2004 (27.07.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2003/011090

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☒ The international application as originally filed/furnished
- ☒ the description:
- pages \_\_\_\_\_ 1-10 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages \_\_\_\_\_ 1-8 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- pages \_\_\_\_\_ 1/2-2/2 \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/11090

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1 to 8	YES
	Claims		NO
Inventive step (IS)	Claims	1 to 8	YES
	Claims		NO
Industrial applicability (IA)	Claims	1 to 8	YES
	Claims		NO

### 2. Citations and explanations

#### 1. Technical field

The invention concerns a Coriolis gyroscope and a method for electronically tuning the sensing frequency to the excitation frequency in a Coriolis gyroscope.

2. Independent claims: claims 1 (method) and 6 (device).

#### 3. Prior art:

Reference is made to the following documents:

D1: WO-A-97 45699, UNIVERSITY OF CALIFORNIA,  
4 December 1997

D2: WO-A-99 19734, IRVINE SENSORS CORP,  
22 April 1999.

Document D1 is considered to be the closest prior art and discloses a Coriolis gyroscope; according to said document, frequency adjustment is effected by the application of a D.C. (bias) voltage to the sensing electrodes.

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Document D2 describes a Coriolis gyroscope, frequency adjustment being effected by the application of a force to the resonator.

4. Novelty (PCT Article 33(2))

4.1 Independent claims 1 and 6:

The subject matter of independent claims 1 and 6 differs from the closest prior art according to document D1 in that a disturbing force caused by the signal noise in the sensing signal is applied in such a way that the excitation vibration remains unaffected and only the sensing signal of the sensing vibration contains the disturbance portion, and in that the frequency of the sensing vibration is controlled in such a way as to minimise said disturbance portion. Thus, the subject matter of claims 1 and 6 is novel over document D1. Document D2 is less relevant.

5. Inventive step (PCT Article 33(3))

5.1 Independent claims 1 and 6:

The objective technical problem, namely to implement frequency tuning in a very precise yet simple manner, is solved by means of the above method and arrangement. Since the excitation vibration remains unaffected, the influence of the Coriolis force on the resonator remains unchanged. Minimising the disturbance portion in the sensing signal results in a simple and yet very accurate method for frequency

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tuning. No such arrangement or method is known from, or suggested by, the prior art citations. The requirements of PCT Article 33(3) are consequently satisfied.

**5.2 Dependent claims 2 to 5, and 7 and 8:**

Dependent claims 2 to 5 and 7 and 8 relate to independent claims 1 and 6, respectively, and concern additional features of said claims; for this reason, the subject matter of dependent claims 2 to 5 and claims 7 and 8 is considered novel and inventive.

**6. Industrial applicability (PCT Article 33(4))**

The invention according to claims 1 to 8 is industrially applicable in the field of Coriolis gyroscopes.

**7. Clarity (PCT Article 6)**

The application fails to meet the requirements of PCT Article 6 because claim 6 lacks clarity:

**7.1 Independent claim 6:**

Although independent claim 6 concerns a Coriolis gyroscope, nowhere in the claim is there any reference to technical features of said Coriolis gyroscope - such as a resonator, for example, or excitation and sensing units. The wording of the claim merely describes a device for electronically

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tuning the frequency of the sensing vibration to the frequency of the excitation vibration in a Coriolis gyroscope. In consequence, a lack of clarity arises; however, said lack of clarity can easily be rectified in the event of a subsequent regional phase.

8. Certain defects in the international application

The alternative second method according to the description (see page 8, line 27 ff.) is not mentioned in the claims and it should therefore have been clearly indicated that said alternative is not part of the claimed invention (e.g. by reference thereto as "an example"). The same applies to the alternative third method described on page 9 (see line 15 ff.).

The patent applications cited in the description (see page 10, lines 19-21) should have been referred to by their publication numbers (see also the PCT International Preliminary Examination Guidelines, paragraph II-4.18).

The following words, "*the full disclosures of the patent applications...are hereby included in the description*" (description, page 10, lines 21-22), should have been deleted (see the PCT International Preliminary Examination Guidelines, paragraph II-4.17).

Pursuant to PCT Rule 5.1(a)(ii), the description should have cited documents D1 and D2 and briefly outlined the relevant prior art contained therein.

These defects can easily be rectified in the event of a subsequent regional phase.

**Concurrent PCT applications:**

EP03/10970 is a PCT application made concurrently with the present application and having the same effective date. The scope of protection of claims 1 to 6 of the present application is the same as that of EP03/10970 and both applications were submitted by the same applicant. The applicant is advised that, in the event of a subsequent regional phase, one or both of the applications should be amended such that they no longer claim the same invention or one of the two applications must be selected for processing with a view to the granting of a patent (see the PCT International Preliminary Examination Guidelines, paragraph IV-6.3).